Impact on Students

Preparation for Higher Education and the Workforce

Errol Brown is Chief Operating Officer of Sharun Paroxy Web Development. He and his two partners founded this web design consulting firm with a national and international client base. Errol was accepted as a research intern on the ICP's Forcings and Chaos team as a student at the Bronx High School of Science, Bronx, NY. His research participation was from 1994 to 1998. He wanted to work alongside scientists and experience their professional world first hand. Errol got this experience and more.

"ICP is like a high octane fuel for the educational system. There is something unique about the environment in ICP. It constantly challenged me to communicate my ideas…"

In his view, the climate modeling team he participated in made a contribution to understanding atmospheric dynamics and its effects on climate. Its work also helped make people more aware of the issues of global warming and climate change. The ICP gave him the chance to learn how people work together in an interdisciplinary environment and appreciate the importance and need for effective communication. At the ICP he came to recognize important objectives in solving problems. He learned to prepare a sound research plan, devise various approaches for addressing different parts of a problem and to be flexible enough to adapt his plans to research findings. The ICP skills he draws on most in his career are problem-solving, computing and communication. It was a primer for presenting himself and appreciating his role and responsibility on a team. He says, **"If you don't do your part of the big picture, others will be affected."**

In his second year at ICP, Errol became a leader in guiding and teaching new research team members. His view is that team research involving people at different levels, is an important way to disseminate knowledge from people in the field to the next generation. **"It is motivational for many students and can help them excel in their studies."** ICP allows the students and teachers to access tools and knowledge that are not available in a regular curriculum. It helped him understand why scientific and technical issues are so important in this world.

After being awarded an American Meteorological Society College Scholarship, he attended the University of Miami, graduating with a B.S. in Marine Science and Biology. His undergraduate research experiences involved studying the impact of a fish species native to Central America on a native species in Miami, Florida. Although he loves scientific research, he prefers the environment of an advanced technology business for his professional career.

Rashele Cross became an ICP student research intern in 1998 as sophomore at Townsend Harris High School and continued through her first year in college in summer 2001. Her goal was to do real research and gain research skills. Her project focused on studying the effects of environmental factors on asthma prevalence. She feels that with continued study, the research could help reduce the number or severity of asthma cases in New York City through policy that would reduce the emission of specific pollutants. The ICP helped her learn computer skills for statistical analysis.

"The ICP taught me the value of my opinions, both scientific and general. Having your ideas and thoughts taken seriously by senior scientists as a high school student offers an immeasurable boost of self-esteem. The opportunity to work with such amazing research scientists … is extremely valuable and I feel blessed to have had the privilege of participating in the program. …contributed greatly to my confidence, my character and to the pursuit of my future goals."

In her last summer at ICP, Rashele moved into a team leadership role assisting her lead scientist, Dr. Barbara Carlson, in team training and management. Rashele earned a full scholarship to Howard University in Washington, DC, where she is majoring in biology.

Now a senior, she is conducting research for her thesis, analyzing the effects of air quality on asthma prevalence in the Washington, DC area. She has been inducted into the Golden Key International Honor Society, the National Society of Collegiate Scholars, Beta Kappa Chi National Scientific Honor Society and *Who's Who Among Students in American Universities and Colleges*. She is also the president of the College of Arts and Sciences Honors Association and has been on the Dean's List every year.

Rashele's research internships have included biomedical research in a nutritional immunology lab at the Human Nutrition Research Center of Tufts University in Boston, MA, and immunology related research through the Biomedical Science Training and Enrichment Program (BioSTEP) at Yale University in New Haven, CT.

After college graduation in May 2004, she hopes to enroll in medical school after teaching for two years with Teach for America. Her goal is to earn a combined MD/PhD and become a pediatric allergist. Rashele is a Campaign Coordinator for Teach for America at Howard University and has co-founded a mentoring program at a nearby elementary school for sixth grade students.

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David Vargas is a Reliability Engineer and Manager for Exxon Mobil Corporation. In 1994 while David was a student at Queensborough Community College he was selected as a research intern on the ICP Storm Tracks and Climate Change team. In this project David said **"I had to develop my own resources and the ability to work independently."** He believes that in the ICP, **"you learn how to structure a problem, set a path for approaching your problem and the value of documenting your progress."**

He worked with the Storm Tracks team through 1996, making a significant contribution to GISS research by developing a computer program for tracking storms in the GISS GCM. His research earned him 2nd Place recognition at a National Science Foundation's Alliance for Minority Participation nationwide research competition.

David completed his undergraduate degree in Mechanical Engineering at Polytechnic University in New York. While an undergraduate he was on the Dean's List every year. He also worked as a research assistant to a Polytechnic University professor studying Finite Element Models of Human Bones. Specifically, David helped developed a computer model to simulate the physical properties of bones for conducting experiments on the effects of hip replacements.

After graduation he was hired by Exxon Mobil where he has steadily moved up the corporate ladder. David is the recipient of the Exxon Mobil Shared Vision Award for innovating plant maintenance practices and saving the corporation $4 million.

In addition to working full-time, he is pursuing an MBA in Energy Management at the University of Houston.

David says his ICP experience is at the center of every academic and job interview because he believes this experience is so different and can be used to assess his workforce readiness.

"ICP creates a good model for students to prepare for the roles they will take on in the future work world. Usually you have to wait until you are in graduate school to get involved in real funded research. This is important because this is the kind of educational experience that gives you a chance to develop writing, technical and problem–solving skills that are just not available in school, yet they are among the highest in demand if you want to be successful. ICP helps you gain confidence in so many areas that are relevant to what you will be doing in scientific or engineering workforce. This gets you ahead of the game."

Dwayne Williams is an Electrical Engineer with the New York City Transit Authority's Department of Capital Program Management. Since 1999, he has been a member of an engineering team responsible for assessment, design and building of numerous projects to improve the efficiency, security and centralization of the New York subway system.

Dwayne was one of the original members of the ICP Clouds and Storm Lifecycles research team in 1994. He began ICP after completing his community college degree in pre-engineering at Queensborough Community College and continued through his junior year at Polytechnic University in 1996. He attended Polytechnic on scholarship and was consistently on the Dean's List.

Upon graduation in 1999 he earned a B.S. degree in Electrical Engineering and was recruited by the New York Transit Authority. During his years in the ICP, Dwayne's research focused on understanding the properties of clouds such as optical thickness, cloud top temperature, and pressure, in different stages of a hurricane and to compare these properties to those found in midlatitude storms.

While he was a research intern, Dwayne said that ICP gave him a greater appreciation and understanding of the importance of environmental science. He also learned that teamwork was essential to a project's success. Today, as he reflects on the impact of the ICP, its emphasis on workforce preparation stands out in his mind. What Dwayne misses most about the ICP is the open problem-solving environment where dialogue and questioning was a trademark of his team's scientist, Dr. George Tselioudis, **"who always had an open-door policy."**

Dwayne's tries to model this in his professional career where he encourages similar interactions with the employees he supervises. His current career goal is to complete his professional engineering license. He has passed the first series of examinations and now is at the final phase of earning this professional certification.

A direct beneficiary of hands-on learning experiences, Dwayne volunteers his time with a high school in the Bronx to mentor students involved in an international robotics competition. This past year, his team placed 9th among 40 other teams. It is evident that Dwayne's personal desire to learn and share his knowledge with others remains a constant feature of his work and extra-curricular endeavors.

"ICP was our first experience in the real world of work. It taught us how to approach a problem in a systematic way and devise a work plan. I use these skills in my current job."

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Danielle Deane is an Associate Program Officer for the Environment at the Hewlett Foundation. Her responsibilities focus on supporting both the advancement of sustainable energy and transportation efforts in the U.S. and Latin America, as well as the development and support of new/non-traditional constituencies to broaden the base of the U.S. environmental movement.

"…science, technology and policy can not be learned in a vacuum, because this will not produce the tools to solve a problem. Rather, we have to use them together to arrive at some solutions."

Danielle was hired at Hewlett after gaining her M.Sc. in Environment & Development from the London School of Economics in 2002. While at LSE, she volunteered for the Center for Social Markets, a non-governmental organization that works to present environmentally progressive businesses at the United Nations World Summit on Sustainable Development.

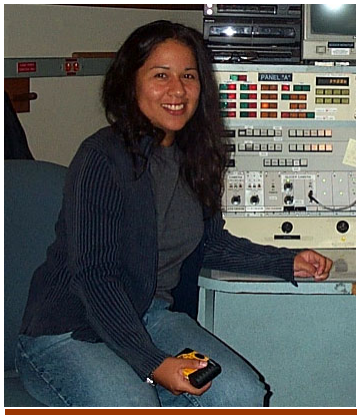
She was recently selected to be a Fellow of the Millennium Ecosystem Assessment (MA), which is designed to improve the management of the world's natural and managed ecosystems by helping to meet the needs of decision-makers and the public for peer reviewed, policy-relevant scientific information on the condition of ecosystems, consequences of ecosystem change, and options for response.

Danielle joined the ICP as a junior at Williams College, majoring in Political Economy with an Environmental Studies concentration. She described her initial interest in ICP as emerging from the institute's **"interdisciplinary approach to science and its practical applications." "ICP gives students valuable exposure to peers and mentors that can serve as lifetime role models and colleagues."**

Her ICP project involved studying the potential for El Niño forecasts to mitigate communal farmers' risks in Zimbabwe. This led to her Williams College thesis, which gained honors in Environmental Studies as well as a published paper, which she co-authored with her GISS science advisor, Dr. Jennifer Phillips.

Following her college graduation, she spent 4 years as a Financial Risk Analyst/Broker specializing in reinsurance at Guy Carpenter & Company, part of the Fortune 500 multinational Marsh & McLennan. Danielle also served as a Field Manager for the Sierra Club/Fund for Public Interest Research wetlands campaign.

Ely Duenas is working full time at the GISS International Satellite Cloud Climatology Project (ISCCP) as an Associate Scientific Programmer where she assists in satellite data analysis and validation. She is also the webmaster for the ISCCP group.



"Reflecting back on my experiences as an ICP researcher, I have realized that becoming a scientist is an attainable goal."

Ely was accepted to the ICP while a sophomore at LaGuardia Community College of the City University of New York. She was interested in being a part of this research program to strengthen her analytic and technical skills, and to experience life as a researcher.

Her research team studied the distribution and structure of aerosols in Jupiter's stratosphere, using Hubble Space Telescope data. The experience of being at ICP helped develop her scientific programming skills while also improving her public speaking skills through her participation in various local and national research conferences.

In addition to research with ICP, Ely was awarded research fellowships in Astrophysics through the University of South Carolina NASA Minority University Space Interdisciplinary Network program. These summer research experiences brought her to the National Optical Astronomy Observatory REU program where she studied globular clusters and to Kitt Peak National Observatory for two observing runs.

These experiences have also proven to be valuable for career networking as the contacts she made with scientists attending her presentation led to her being awarded four out-of-state research internships. She has received various certificates of recognition at the conferences where she has presented her research.

Ely completed her undergraduate degree in Physics at Queens College with a minor in Computer Science. She plans to attend graduate school and continue with astronomy-related studies.